# ANAPLASMOSIS

(formerly termed ehrlichiosis; human granulocytic ehrlichiosis [HGE])

1. **Agent**: Anaplamosis is caused by *Anaplasma phagocytophila*, an ehrlichial organism formerly known as *Ehrlichia phagocytophila, E. equi*.

2. **Identification**:

   a. **Symptoms**: Human ehrlichiosis/ anaplamosis are newly recognized diseases in USA. The spectrum of disease ranges from mild illness to a severe, life-threatening or fatal disease. Symptoms are usually nonspecific; the most common complaints are fever, headache, anorexia, nausea, myalgia and vomiting. The disease may be confused clinically with Rocky Mountain spotted fever (RMSF) but differs by rarity of a prominent rash.

   Laboratory findings include leukopenia, thrombocytopenia, and elevation of one or more liver-function tests. In hospitalized cases, the laboratory findings may be only slightly abnormal on admission, and become more abnormal during hospitalization.

   b. **Differential Diagnosis**: RMSF, bacterial sepsis, Lyme disease, endemic (murine) typhus, toxic-shock syndrome, gastro-enteritis, viral syndromes, tick-borne encephalitis and other multi-system febrile illnesses.

   c. **Diagnosis**: Preliminary diagnosis of ehrlichiosis/anaplamosis in the USA is based on clinical and laboratory findings. Confirmation is based on: the evaluation of a blood smear, development of serum antibodies to *E. chaffeensis* for ehrlichiosis or *A. phagocytophila* for anaplamosis; immunofluorescence test; PCR.

3. **Incubation**: 7 to 21 days for ehrlichiosis/anaplamosis.

4. **Reservoir**: White-tailed deer are a major host of lone star ticks and appear to represent one natural reservoir for *E. chaffeensis*. Deer, elk, and wild rodents are likely reservoirs of the agent of HGE.

5. **Source**: Ehrlichiosis/anaplamosis in North America has been concentrated in the southeastern and south-central areas of the USA. More than 12 human cases, including 3 deaths, caused by a granulocytic *Ehrlichia*, have occurred in northern Minnesota, Wisconsin, Connecticut, Maryland and Florida. Rarely cases of ehrlichiosis/anaplamosis have been diagnosed in California.

6. **Transmission**: In the United States, ehrlichiae are transmitted by the bite of an infected tick. The lone star tick (*Amblyomma americanum*), the blacklegged tick (*Ixodes scapularis*), and the western blacklegged tick (*Ixodes pacificus*) are known vectors of ehrlichiosis/anaplamosis in the US. *Ixodes ricinus* is the primary vector in Europe. Most patients report a tick bite or association with wooded, tick-infested areas prior to onset of illness.[1]

7. **Communicability**: No evidence of person-to-person transmission.

8. **Specific Treatment:** A tetracycline such as doxycycline; chloramphenicol for pregnant women and children under 8 years of age.

9. **Immunity**: Susceptibility is believed to be general. No data are available on protective immunity in humans from infections caused by these organisms. Re-infection is rare but has been reported.

## REPORTING PROCEDURES

1. Reportable within 7 days of diagnosis (Title 17, Section 2500, *California Code of Regulations)*.

2. **Report Form:** **EHRLICHIOSIS/ANAPLASMOSIS CASE REPORT (CDPH 8573)**

3. **Epidemiologic Data**:

   a. Recent travel to endemic areas.

1 See http://www.cdc.gov/anaplasmosis/.

b. History of tick bites.

c. History of possible exposure to ticks in wooded areas.

d. Occupational exposure.

**CONTROL OF CASE & CONTACTS**:

**CASE**:

1. **Isolation**: None.

2. **Concurrent disinfection**: Remove any ticks.

**CONTACTS**: No restrictions.

**PREVENTION-EDUCATION**

1. Use of tick repellants in endemic areas.

2. Wear protective clothing in wooded areas.

3. Control ticks on domestic animals.

4. Avoid tick-infested areas when possible. Check skin periodically and remove attached ticks immediately.

**DIAGNOSTIC PROCEDURES**

1. **Serology**: Indirect immunofluorescence.

   **Container**: Serum separator tube.

   **Laboratory Form**: State special serology.

   **Examination Requested**:
   Ehrlichiosis/anaplamosis.

   **Material**: Whole blood.

   **Amount**: 10 ml.

   **Storage**: Refrigerate until transported.

2. **PCR**

   **Container**: Red top or red-grey top tube.

   **Material**: Serum.

   **Amount**: 1 ml.

   **Storage**: Refrigerate or freeze until transported.